ELECTRONIC REPORTING OPTIONS FOR RMP

Background

The U.S. Environmental Protection Agency is developing electronic reporting capabilities for collecting compliance data from industry and delegated states. The impetus for this project is the congressional mandate through the Government Paperwork Elimination Act (GPEA) that Federal agencies support paperless reporting options by 2003. The EPA had already developed their action plan for developing electronic reporting initiatives through Electronic Commerce in a policy called Reinventing Environmental Information (REI).

With guidance from REI, the EPA Office of Policy is evaluating six major EPA reporting systems. One of the reporting systems is the Risk Management Plan (RMP) under the Risk Management Program. The collective reporting systems overlap organizations to which their regulations apply. To simplify and coordinate the electronic reporting process the EPA is creating a Central Receiving system. The use of a Central Receiving process may introduce additional or alternate electronic reporting preferences than what RMP would consider independently of the other reporting systems. Central Receiving is similar to the One-Stop initiative supported by EPA to develop a single point for industry to communicate electronic compliance reports. Some possible approaches to Central Receiving would provide web forms for small industrial users and an Electronic Data Interchange (EDI) gateway option for larger industries that want to submit data out of their own application.

The Risk Management Program already encourages electronic reporting. RMP*Submit is a program made available for submitters to develop their Risk Management Plan and output an ASCII file for sending to EPA on a diskette. This paper briefly outlines alternative EC technologies that should be evaluated for future RMP submissions and as part of the overall Central Receiving implementation.

AS-IS Process

A facility is required to develop an RMP if they maintain or utilize particular thresholds of select toxic contaminants. An RMP details scenarios for potential accidental releases of toxins and how the facility suggests reacting to such releases. RMP submissions are required every five years, but must be updated as necessary to reflect new statuses of toxins and potential scenarios.

Of the six reporting systems involved in Central Receiving, an RMP has one of the largest set of data requirements. Along with a large amount of textual data RMPs is may include graphic files to support the submission data with layouts and maps.

The first collections of RMPs are being processed by an EPA contractor, Computer Based Systems Inc. (CBSI). CBSI also collects compliance data for EPA's Toxic Release Inventory (another system being evaluated for Central Receiving). The contractor has adapted much of their collection process for TRI to accommodate RMP.

When the submissions arrive the documents are date stamped and barcodes are affixed, including for diskettes, for tracking purposes. Diskettes are virus scanned and passed on for processing into the RMP*Maintain system. The few paper submissions received are keyed into the system by double entry and are checked for data entry errors. The submitted information is filed and the submitter receives a report detailing if the submission was either complete, incomplete, or could not be processed.

A major difference between TRI and RMP processing is that CBSI is not authorized to modify or request specific modifications to an RMP. Submitted data is to be entered as-is. Only those RMPs that cannot be processed need to be resubmitted.

RMPs can contain Confidential Business Information (CBI). In those instances, the submitter is required to submit both a sanitized and non-sanitized submission. The non-sanitized CBI must be submitted only in paper, is never entered into a computer system, and is stored separately from non-CBI submissions in a secure archive.

All RMP submissions require a signed paper certification statement attesting to the truthfulness and completeness of the information in the RMP. It is anticipated that initially around 1% of submissions will be verified by inspectors. A number of submitters had their RMPs developed by contractors and then certified the report themselves. We do not know how many used contractors because they did not understand the reporting requirements or just did not desire to work on the report themselves.

Why change?

The RMP*Submit diskettes may be compatible with Central Receiving, but have a number of inherent negatives. The current RMP*Submit diskettes require human intervention to check the diskettes, upload the data, and notify submitters of the results. There are other methods that can automate the process and significantly reduce the need for human intervention. Also, so much human intervention decreases the level of security for the data. We will look more closely at the issues of diskettes in greater detail in the alternatives that follow.

Another issue is the uniqueness of the RMP*Submit software and output file. In a Central Receiving environment it is easier to maintain software that is compatible

with multiple systems. While RMP specific programming would still be necessary, some of the programming could be shared/borrowed from similar reporting processes of the other reporting systems.

As discussed in the options below, some alternatives can provide a general input medium that can be applied to multiple outputs. There are also ways to develop OneStop type web centers that can be used by low end users with few requirements beyond a web browser and internet connection.

Introduction to Alternatives

The EPA is looking to provide a practical set of electronic reporting options that will make electronic reporting available to all users. The following options are methods of communicating data electronically. These options are not mutually exclusive to implement. However, each does have particular strengths and weaknesses for users and types of reports and should be considered for practical value.

CONTINUED USE OF DISKETTES

The use of RMP*Submit generated files on diskettes provides a highly controlled system for submitters to generate the proper input data for RMP*Maintain. Since it is the file generated by RMP*Submit that is important, external organizations can develop their own applications to generate their RMP data in the same format. RMP*Submit files could be another method of conveying submissions through the Central Receiving process and be communicated on to RMP*Maintain as any other method would.

But to expand on the points raised in the proceeding section, the use of diskettes to receive data requires human intervention that slows the submission process and generally requires extra, costly controls to prevent human error. The external problem to the EPA processing center is the mail system. Internal considerations are the personnel involved in receiving and processing the diskettes.

One external risk of mailing a diskette is the uncertainty of whether the disk will get to where it is going. To ensure that the disk gets to the processing center it is up to the submitter to pay for certified mail or similar courier that tracks the delivery of mail. Related to this issue is the speed of delivery. If the submission deadline is approaching the cost goes up for a submitter to express ship the disk. Still, the submitter will have to wait for confirmation that the mail service delivered the disk. Their only recourse should the disk be lost is to provide EPA with the shipment receipts as proof that they attempted to send the submission on time and then mail another disk.

Another problem with disks is their durability. Once in the mail, a disk can be jostled and bent if improperly packaged. Less common but still possible is damage due to storage in improper temperatures or proximity to electromagnetic energy that can demagnetize the disk.

Once received at the processing station other controls may be necessary to guard against lost disks or improper processing. As shown in the as-is processing, CBSI has implemented strong controls such as bar coding and transmittal records to track processes. With diskette processing the best way to ensure against human error is to automate much of the process and the controls.

Even with secure facilities and these controls do not provide as strong a level of security as encrypted data sent to a secured server. Access and editing permissions for submissions can be limited to submitters with proper user IDs and passwords. Transmission options can provide for secure data channels and/or the use of encryption technologies.

ELECTRONIC DATA INTERCHANGE

For large organizations that maintain applications with relevant compliance data, Electronic Data Interchange (EDI) may be a viable reporting method. Many large organizations may already have EDI systems for retail and banking functions and they may be able to leverage those EDI systems for reporting EPA compliance data. It is possible that only a small fraction of the thousands of RMP submitters would have the capability to use an EDI transaction to submit their RMP. Even those that do have EDI capabilities may not see the RMP cycle as regular enough to justify programming their computers to generate an EDI transaction themselves. Still, in an Central Receiving environment an EDI submitter may have only a limited amount of extra programming to apply similar maps from other reporting systems to an RMP transaction. Even software vendors that may develop RMP specific applications for smaller organizations could develop an application that would output the EDI transaction.

A new transaction set is being developed for environmental compliance reporting that can accommodate RMPs as well as other compliance reports. The submitter's application could produce RMPs and re-submissions. Withdrawals can be automated through the EDI system as well. The EDI translator would load the proper conversion map for a RMP transaction and convey the output to RMP*Maintain.

The big negative to an EDI systems is cost. The better low end software packages still run in the tens of thousands. That is on top of considerations for a computer server and Value Added Network connection charges. If the Risk Management Program were on its' own, the development and maintenance of an EDI system to

receive RMPs may not seem practical. The existence of a Central Receiving system could distribute that cost and allow EPA to leverage EDI significantly across reporting systems.

WEB SUBMISSIONS

The cost required for EDI may be beyond most organization's budgets and the necessary technical savvy for a complex report like the RMP may not be readily available. These organizations need EPA to assist with the technical development for electronic reporting. For many, a downloadable web application may be the solution.

Do to the length and complexity of the RMP form, any web form must be considerate of the following:

- ◆ The submitter should be able to fill in the form off-line.

- ◆ The form should be robust and assist the submitter with common data.

- ◆ The form's layout and instructions will have to be straightforward.

The size of an RMP may make it impractical to develop a single web page. Linked forms could walk submitters step-by-step through the form. Dropdown menus, checkboxes and on-line help should be used whenever possible. Lessons learned from the development of RMP*Submit would be valuable for designing a web layout.

A web form should hold a version of the submitted report data for the submitter to issue re-submittals and allow a printout for the submitter's records. The EPA web site could also include functions for a submitter to request the withdrawal of their RMP.

Thick Client

The ability to build a robust form that can be used off-line requires a thick client implementation. Thick client web forms download resident Java or Active X program code to the submitter's computer that allows functionality beyond just the presentation code of HTML. A thick client web page requires the user to have a web browser that is compatible with the program code. For example, Java applets typically require particular versions of Netscape or MS Internet Explorer, but these browsers are make up the predominance of browsers in use now and are freely distributed. Some commercial tools are available to assist in building thick client pages.

Web Enabled Electronic Commerce Software

Using Electronic Commerce software designed for web transactions can simplify the development of forms. (One such product being tested by EPA is Sterling Commerce's GENTRAN Web Suite.) Not all web EC products are designed for thick form development so a product must be evaluated for the implementation capabilities. A benefit of EC software is that some can leverage mapping tools designed for EDI to generate output files and manage distribution of data to one or more applications.

Web EDI software products are geared towards large organizations that wish to act as a data collection hub. Training is often required to become familiar with the development tools.

Some approaches may use functions related to the operating system that can limit the operating systems to which they are compatible. In those cases make sure the operating systems are a commonly used one such as Windows.

Adobe Acrobat

Adobe sells a PDF form developer that can integrate form inputs into a PDF and plugs into a browser to communicate the input to the web server. PDF format ensures that the form always looks the same and can be integrated with hashing functions to guard against tampering. However, the ability to combine functions like the hash aren't trivial. The cost of the product is minimal compared to some web based EDI, but looses some of the simplified connectivity advantages.

Java Applets/ Active X

A web form can be programmed from scratch, such as a Java applet and/or in combination with web-to-database development products like Cold Fusion. The advantage of Java applets is that they generally work with web browsers on a variety of platforms.

Thin Client

A thin client approach only requires the submitter to have a browser, but would not download resident applets to the submitter. All form processing would be live on the EPA's web server. This means that the submitter would always have to be connected to the EPA web site in order to complete the RMP. The system could be designed to allow partial RMPs to be saved so that the submitter could work on the RMP in multiple sittings.

Other reporting systems may require their submitters to have styluses for digitized signatures that may not be compatible with a thin client. It will be up to the Risk Management Program to decide if RMPs will need likewise requirements.

Transmission Formats

Each of the web page methods above can deliver the form data to an application in more than one format. Here we will discuss some possible delivery formats for a web page.

HTML

HTML is the common presentation language for web pages. But HTML is not designed for communicating business data. In order for HTML to convey business data it has to be in a defined sequence that can be directly plugged into applications using SQL or Microsoft Visual Basic scripts on the server. This approach allows the form data to go straight to the application and can be useful for querying capabilities. However, even with GUI development tools it may be difficult to set up application connections for large numbers of data elements and can be more difficult to maintain than comparable options.

XML

A possible future format of the web form could make use of the eXtensible Markup Language (XML). XML is similar to HTML. XML expands on HTML to define the semantic meaning of data and has great potential for communicating standard data and for searching the web. However, the necessary XML tags for environmental data need to be defined first. There are a number of major technology organizations working to support XML. This is good and bad, because with the support, a number of organizations are trying to pre-position themselves for XML before all the details are worked out. This pre-positioning has lead to some disparate implementations of XML that may need adjustments.

If an EC solution is utilized the mapping of a future XML implementation should be possible. Any-to-any mappers should be able to translate XML tags and future releases of the software will most likely simplify the import of tag definitions, as they currently do for EDI structures.

EDI

With web EDI another possibility is to have the web form output an EDI transaction. The web page is still based in HTML, but the web server communicates the data to the application by linking the form to EDI data elements. Using EDI the transactions can be recorded in a single log whether they originate

from web or EDI. There is little to be gained from generating an EDI transaction without compatible web EDI tools. You may still be able to use a single transaction log, but the effort to generate a proper EDI transaction may be problematic without the connectivity to the EDI system's trading partner management software.

PAPER

Paper submission may never totally go away. We know that paper submissions suffer similar problems of damage and errors as diskettes. On top of that paper submission tend to take more room to store. Also, if they are filled in by hand, they are more susceptible to interpretive data requirements by submitters and can be difficult to read by recipients. Still, society understands what it means to certify most standard paper forms. And as long as someone has problems with a computer they will request a paper fallback to submit their RMPs.

Related Issues

SECURITY

A policy is in the works for the securing of sensitive RMP information from being made public. It is anticipated that some sections of the RMP will be restricted from public access. That means that the data transmission of an RMP should be secured through encryption. Passwords to an RMP submitting web site should restrict access and RMPs should be held well behind the server's firewall.

There is also a certification statement for RMPs that attests to the truthfulness of the data represented. An electronic signature (RMP prefers a digital one) could be used for non-repudiation of RMPs. However, at this time EPA's agreement with the Department of Justice requires use of digitized signatures with the NPDES Discharge Monitoring Report. As part of the Central Receiving effort an architecture based on digitized signatures is being developed until Federal guidance is developed for digital signatures, possibly in a Public Key Infrastructure.

DELEGATION

Six states have delegated authority for the RMP program. These states may tighten the RMP reporting requirements for regulated entities in their states by expanding reporting requirements beyond the EPA minimums. At the very least, this means that the regulated entity may have to report lower thresholds or additional data requirements to the State. How can EPA and these delegated states cooperate to simplify the reporting requirements for their regulated community?

In an EDI system the submitter could develop separate maps and with the push of a button have the proper RMP sent to each accordingly. Another option would have either the EPA or delegated State collect the all RMPs for the State and then pass on the required data to the other in an agreed format.

Conclusions

A thick web form leveraged against an EC/EDI package would provide options for submissions via a common processing architecture. The web and EDI solutions could be made to work seamlessly together by sharing transaction mappings. A few EC translation software packages offer enterprise solutions that could process a select set of submission methods. The Web appears to have the widest potential applicability among the pool of submitters. Even though the number of EDI transactions may be low the EC management software would be beneficial for managing communications, logging and archiving transactions, and data distribution.

The EC software could process RMP*Submit formatted data for those organizations that have already invested in systems based on RMP*Submit. This would require EPA to select an EC software package that has "any-to-any" file mapping capability. But in order to avoid maintaining multiple implementation documents for submitters, the option of direct RMP*Submit formatting should be restricted to an "as appropriate" basis. Even further, those that continue on RMP*Submit output should be encouraged to electronically transmit the output via secure internet connection or dial-up FTP rather than on diskette.

Security will be strongly influenced by the reporting options as web/EC software generally has few built-in security solutions. Typically SSL is supported and others claim their software can be attached to external solutions. The sensitivity of the RMP data will require some form of standardized encryption be available for web and EDI transactions, but they need not be the same.

Coordination with Delegated States should result in a general model that will permit submitters to generate an RMP once. A possibility would be for multiple mappings of the RMP be developed with delegated States. When a submitter from a delegated State logs into the EPA web site or transmits an EDI transaction, the respective form and mapping can be called up for that specific state and the server could distribute the received data to the appropriate parties. A problem with this EPA centric collection may be the coordination of delegated state data maps. However, the issue is only relevant when States require extra data elements, but not for lower thresholds. Also, the new reporting requirements typically require an implementation delay for submitters and regulators to adjust and test their systems anyway.